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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/934,085	08/22/2001	Rudiger Schutte	32301W198	7366

7590 03/21/2007  
Smith, Gambrell & Russell, LLP  
Suite 800  
1850 M Street, N.W.  
Washington, DC 20036

EXAMINER
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LEUNG, JENNIFER A

ART UNIT	PAPER NUMBER
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1764

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/21/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

09/934,085

Applicant(s)

SCHUTTE ET AL.

Examiner

Jennifer A. Leung

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 7-17, 19-21, 23-33, 35 and 36 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 and 7-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17, 23-25, 33 and 36 is/are rejected.
- 7) ☒ Claim(s) 19-21, 26-32 and 35 is/are objected to.
- 8) ☒ Claim(s) 1-5, 7-17, 19-21, 23-33, 35 and 36 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's amendment submitted on December 8, 2006 has been received and carefully considered. Claims 1-5 and 7-16 are withdrawn. Claims 6, 18, 22 and 34 are cancelled. Claims 17, 19-21, 23-33, 35 and 36 are under consideration.

### ***Claim Objections***

2. Claim 17 is objected to because of the following informalities:

In line 11: "able" should be deleted.

In line 18: "nm" should be changed to --mm--. [Note: The Examiner has interpreted the insertion of "nm" units (i.e., nanometers) as a typographical error, and not new matter, because Applicants have referred to the use of "mm" units in the Remarks section of the response].

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 17, 24, 25, 33 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Furuya et al. (JP 06-111838).

Regarding claim 17, Furuya et al. (see, e.g., FIGs. 1, 2 and 7; sections [0034]-[0037]) discloses an apparatus comprising a reactor in which there are located a plurality of wall

Art Unit: 1764

elements (i.e., combustion plates **2** in FIGs. 1, 2; labeled as combustion plates **20** in FIG. 7) and a plurality of slot-shaped reaction spaces (i.e., fluid flow paths **3** of reforming plates **1** in FIGs. 1, 2; labeled as fluid flow paths **23** of reforming plates **22** in FIG. 7);

a) each of the slot-shaped reaction spaces **3/23** is formed between lateral surfaces of two spaced apart, substantially equally large and substantially right-parallelepipedal wall elements made of solid plates **2/20**, the wall elements being arranged interchangeably in a block within a virtual right parallelepiped (see FIG. 7);

c) the slot-shaped reaction spaces **3/23** have a slot width of between 0.05 and 5 mm (e.g., a depth of 0.6 mm and a width of 0.18 mm in Example 1, section [0058]; a depth of 100 micrometer in Example 3, section [0064]);

d) each wall element **2/20** comprises a plurality of tubular cavities (i.e., fluid flow paths **4/21**) being parallel to each other; and

e) each wall element **2/20** comprises at least one feed channel which leads into the reaction space **3/23** through at least one of the lateral surfaces of the wall element **2/20** (e.g., via internal manifolds, comprising hole **28** as shown in FIGs. 7).

Regarding claims 24 and 25, Furuya et al. further discloses that the lateral surfaces of the wall elements facing towards the reaction spaces may be at least partially coated with catalyst material (i.e., a coating of catalyst material is provided on both of the lateral surfaces of the wall elements; see FIG. 4; section [0029]), and provided with a profiled structure (see FIGs. 5 and 6).

Regarding claim 33, the wall elements may be accommodated as a block in a pressure vessel (e.g., as in FIG. 13).

Regarding claim 36, the apparatus of Furuya meets the claims because the slot **3/23**

Art Unit: 1764

widths are capable of being varied by varying the thickness of the plates **1/22** (as evidenced by sections [0058], [0064]).

Instant claims 17, 24, 25, 33 and 36 structurally read on the apparatus of Furuya et al.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya et al. (JP 06-111838) in view of Koga et al. (JP 04-310229).

Furuya et al. discloses that the reaction spaces **3/23** are coated with a catalyst layer (i.e., a reforming catalyst layer **6**; FIG. 2). Furuya et al., however, is silent as to whether the catalyst may instead comprise a granular catalyst, such that the reaction spaces **3/23** are filled with the granular catalyst. In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to substitute a granular catalyst for the catalyst coating in the apparatus of Furuya et al., on the basis of suitability for the intended use thereof, because the use of granular reforming catalysts is conventional in the art, as evidenced by Koga et al. (i.e., Koga teaches a granular reforming catalyst **2** that fills a reforming chamber **1** of a plate type reformer; see FIG. 1 and abstract), and the substitution of known equivalent structures (e.g., the substitution of one known form of reforming catalyst for another known form of reforming catalyst, for conducting the same reaction) would involve only ordinary skill in the art.

***Allowable Subject Matter***

5. Claims 19-21, 26-32 and 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of

Art Unit: 1764

the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 19-21 and 35, the prior art does not disclose or adequately teach an apparatus of the instantly claimed configuration, in combination with a distribution medium on at least one side of the block, for feeding reactants to the reaction spaces.

Regarding claims 26-32, the prior art does not disclose or adequately teach an apparatus of the instantly claimed configuration, in combination with the claimed feature of the reaction spaces being covered on the narrow sides of the wall elements extending parallel to the direction of flow of the reactants by plates in which there are located openings for feeding and draining of a heat-carrier into the wall elements and out of the wall elements.

### *Conclusion*

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Art Unit: 1764

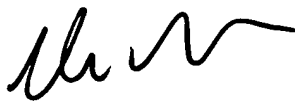
\* \* \*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jennifer A. Leung  
March 18, 2007 

  
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PRIMARY EXAMINER  
rc GROUP 1700